

What is Claimed Is:

1. An electrodialysis method comprising:

contacting an aqueous solution having a total anion or total cation concentration of 1.8N or less with a membrane electrodialysis system, the membrane electrodialysis system comprising at least one bipolar membrane in between a plurality of cationic membranes or a plurality of anionic membranes, a cathode electrode, and an anode electrode when all of the membranes are disposed between the cathode electrode and the anode electrode;

applying an electrical potential across the anode electrode and cathode electrode for a time effective for changing the pH of the aqueous solution by at least 2.0 and providing an electrodialyzed composition having a total anion or total cation concentration of 1.0N or less, individual cation or anion concentrations of 0.6N or less, and a free chlorine content of 2 ppm or less.

2. The method of claim 1 wherein the membrane electrodialysis system includes a bipolar membrane in between two cationic membranes.

3. The method of claim 2 wherein the electrodialyzed composition has total cation concentration of 0.5 N or less, individual cation concentration of 0.3N or less, a free chlorine content of 2 ppm or less and a pH of 5.0 or less.

4. The method of claim 3 wherein the electrodialyzed composition has total cation concentration of less than 0.1N and individual cation concentration of less than 0.04N.

5. The method of claim 1 wherein the membrane electrodialysis system includes a bipolar membrane in between two anionic membranes.

6. The method of claim 5 wherein the electrodialyzed composition has total anion concentration of 0.5N or less, individual anion concentration of 0.3N or less, a free chlorine content of 2 ppm or less and a pH or 8.0 or greater.

7. The method of claim 6 wherein the electrodialed composition has total anion concentration of 0.1N or less and individual anion concentrations of 0.04N or less.

8. The method of claim 1 wherein an electrical potential of 0.1 to 10 volts per cell is provided across the anode electrode and cathode electrode.

9. An electrodialed composition suitable for human consumption, the composition comprising a total cation concentration of 1.0N or less, individual cation concentration of 0.6N or less, a free chlorine content of 1 ppm or less, and a pH of 5.0 or less.

10. The electrodialed composition of claim 9 wherein the total cation concentration of 0.5N or less, individual cation concentration of 0.3N or less, a free chlorine content of 1 ppm or less, and a pH of 5.0 or less.

11. The electrodialed composition of claim 10 wherein the total cation concentration is 0.1N or less and the individual cation concentrations are less 0.04N or less, and the free chlorine content is 1 ppm or less.

12. An electrodialed composition suitable for human consumption, the composition comprising a total anion concentration of 1.0N or less, individual anion concentrations are 0.6N or less, a free chlorine content of 1 ppm or less, and a pH of 8.0 or greater.

13. The electrodialed composition of claim 12 wherein the total anion concentration is 0.5N or less, individual anion concentrations are 0.3N or less, and the free chlorine content is 1 ppm or less.

14. The electrodialed composition of claim 13 wherein the total anion concentration is 0.1N or less and individual anion concentrations are 0.04N or less.

13. An electrodialed composition suitable for human consumption prepared by a method comprising:

contacting an aqueous solution having a total anion or total cation concentration of 1.8 N or less with a membrane electrodialysis system, the membrane electrodialysis system including at least one bipolar membrane in between a plurality of cationic membranes or a plurality of anionic membranes, all of the membranes being disposed between a cathode electrode and an anode electrode;

applying an electrical potential across the anode and cathode for a time effective for changing the pH of the aqueous solution by at least 2.0 and providing an electrodialyzed composition having a total anion or total cation concentration of 1.0N or less, individual cation or anion concentration of 0.6N or less, and a free chlorine content of 1 ppm or less.

16. The composition of claim 15 wherein the membrane electrodialysis system includes a bipolar membrane in between two cationic membranes.

17. The composition of claim 16 wherein an electrical potential is applied across the anode and cathode for a time effective for providing an electrodialyzed composition having a total cation concentration of 0.5N or less, and individual cation concentration of 0.3N or less.

18. The composition of claim 17 wherein the electrodialyzed composition has a total cation concentration of 0.1N or less and individual cation concentration of 0.04 N or less.

19. The composition of claim 15 wherein the membrane electrodialysis system includes a bipolar membrane in between two anionic membranes.

20. The composition of claim 19 wherein an electrical potential is applied across the anode and cathode for a time effective for providing an electrodialyzed solution having a total anion concentration of 0.5N or less, an individual anion concentration of 0.3N or less, a free chlorine content of 1 ppm or less and a pH of 8.0 or greater.

21. The composition of claim 20 wherein the electrodialyzed composition has a total anion concentration of 0.1N or less and individual anion concentration of 0.04N or less.

22. The composition of claim 15 wherein an electrical potential of 0.1 to 10 volts per cell is provided across the anode and cathode electrode.